

BLUE

23

Date: Wednesday, 5/16/2007 8:13:15 AM
User: Kim Johnston

Process Sheet

SPLIT-2

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 32373
Estimate Number : 11057
P.O. Number : N/A
This Issue : 5/16/2007 S.O. No. : N/A
Prsht Rev. : NC
First Issue : N/A Type : PURCHASED PARTS
Previous Run : 29108
Drawing Name : 02.250 SUPPORT
Part Number : D28911 up
Drawing Number : D2891 REV A1
Project Number : N/A
Drawing Revision : A1
Material : N/A
Due Date : 6/5/2007 Qty: 14 Um: Each
Written By :
Checked & Approved By : J. Johnston 05.16
Comment : Est. C 02.11.26 Added P/O KJ

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 PG PURCHASING



Comment: PURCHASING

Issue P/O: 3795

C 207/05/17

(16)

Description: D6104-003

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

Blank size makes (2) D2891-1

2.0 D6104003 17-4 SS Roundbar 3.25"OD



Comment: Qty.: 1.0000 Each(s)/Unit Total : 16.0000 Each(s)
Support 2.25 dia

3.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect for Transit Damage

Ensure Material Release Note is attached

Box 06/05 (16)

4.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI LATHE

Turn blank for Haas as per Folio FA046

JL / 2.801/06/07

5.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

JL / 2.801/06/07

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: PD Date: 07/07/23
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 5/16/2007 8:13:15 AM

User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.250 SUPPORT

Job Number: 32373

Part Number: D28911

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS

Machine as per Folio FA046

Tumble & Deburr

J.L 07/07/04

(16)

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

J.L 07/07/04

(16)

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

J.L 07/07/04

(16)

9.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

-PRIME

- PAINT DELFLEET BLUE

-CLEAR DELFLEET

10.0

QC14

INSPECT SPRAY PAINT



Comment: INSPECT SPRAY PAINT

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

stock updated

U 07/07/04

30

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

U 07/07/04

(30)

Job Completion



U 07/07/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/06/12	4.0 DS	Support #15 to short the length is 3.679" and the shoulder of .100 is .087!! <u>wrong tool offed</u>	UP 07.06.27 PV QSI 042	PARTS ARE ACCEPTABLE; ANY BLEND OUT ANY MARKS BY HAND (REF DS EMAIL ATTACHED)		UP 07.06.27 PV QSI 042		UP 07.07.04
		Support #2 mark show on shoulder. Tool offed. Support 16 shoulder .100 To thin .080"						
		Support #15 shoulder the .100 is too thin .088.						

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 32373
Description: Ø2.250 Support		Part Number: D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.274	2.279		2.275	2.276	2.278	2.277		
B	3.702	3.722		3.680	3.712	3.712	3.710		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.733	.730	.730	.730		
E	0.090	0.110		.087	.090	.090	.090		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.032	2.032	2.032	2.032		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.918	.919	.919	.919		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.099	.099	.099	.098		
L									
HAAS Section									
AA	0.188	0.193	DT8706	.189	.189	.189	Ø.189"		
AB	0.240	0.260		.250	.248	.248	.242"		
AC	0.115	0.150		.124	.125	.125	.125"		
AD	0.040	0.060		.053	.048	.052	.052"		
AE	0.010	0.020		.015	.015	.015	.015"		
AF	0.240	0.260		.250	.250	.250	A.250"		
AG	0.290	0.310		.300	.300	.300	.305"		
AH	0.115	0.150		.130	.132	.131	.125"		
AI	0.454	0.474		.460	.462	.461	.462"		
AJ	2.779	2.789		2.784	2.784	2.784	2.784"		
AK	0.240	0.260		.250	.250	.250	A.250"		
AL	1.002	1.042		1.040	1.039	1.042	1.042"		
AM	0.053	0.073		.063	.063	.063	A.063"		
AN	0.257	0.262	DT8683	.259	.259	.259	Ø.257"		
AO	1.663	1.683		1.665	1.673	1.672	1.672"		
AP	0.053	0.073		.063	.063	.063	A.063"		
AQ	0.022	0.042		.032	.032	.032	A.022"		
AR							.032		
AS									
Accept/Reject									

Measured by: J.F./JI	Audited by: Jnr
Date: 07/06/07	Date: 07/07/04

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	J

DART AEROSPACE LTD	Work Order: 32373
Description: Ø2.250 Support	Part Number: D2891-1
Inspection Dwg: D2891 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions				By	Date
Dim	Min	Max	Go/No Go Gauge	5	6	7	8		
Lathe Section									
A	2.274	2.279		2.278	2.278	2.277	2.278		
B	3.702	3.722		3.710	3.710	3.710	3.713		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.730	.730	.732	.732		
E	0.090	0.110		.090	.100	.103	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.030	2.040	2.040	2.040		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.922	.922	.920	.930		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.099	.100		
L									
HAAS Section									
AA	0.188	0.193	DT8706	.189	.189	.189	.189		
AB	0.240	0.260		.255	.252	.253	.249		
AC	0.115	0.150		.125	.125	.125	.125		
AD	0.040	0.060		.054	.052	.055	.058		
AE	0.010	0.020		.015	.015	.015	.015		
AF	0.240	0.260		.250	.250	.250	.250		
AG	0.290	0.310		.305	.300	.300	.300		
AH	0.115	0.150		.125	.129	.130	.130		
AI	0.454	0.474		.455	.460	.457	.463		
AJ	2.779	2.789		2.784	2.784	2.784	2.784		
AK	0.240	0.260		.250	.250	.250	.250		
AL	1.002	1.042		1.042	1.042	1.037	1.042		
AM	0.053	0.073		.063	.063	.063	.063		
AN	0.257	0.262	DT8683	.257	.259	.259	.259		
AO	1.663	1.683		1.672	1.671	1.671	1.673		
AP	0.053	0.073		.063	.063	.063	.063		
AQ	0.022	0.042		.032	.032	.032	.032		
AR									
AS									
Accept/Reject									

Measured by: <i>SE</i>	Audited by: <i>mx</i>
Date: <i>07/06/07 / 07/06/11</i>	Date: <i>07/07/04</i>

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	<i>[Signature]</i>

DART AEROSPACE LTD		Work Order:	32373
Description: Ø2.250 Support		Part Number:	D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	9	10	13	12A	By	Date
Lathe Section									
A	2.274	2.279		2.275	2.278	2.278	2.278		
B	3.702	3.722		3.713	3.713	3.713	3.714		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.728	.728	.728	.730		
E	0.090	0.110		.101	.101	.101	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.040	2.040	2.040	2.040		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.929	.929	.929	.929		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.100	.101		
L									
HAAS Section									
AA	0.188	0.193	DT8706	.189	.189	.189	.189		
AB	0.240	0.260		.250	.248	.249	.251		
AC	0.115	0.150		.125	.125	.125	.123		
AD	0.040	0.060		.057	.058	.056	.057		
AE	0.010	0.020		.015	.015	.015	.015		
AF	0.240	0.260		.250	.250	.250	.250		
AG	0.290	0.310		.305	.305	.305	.305		
AH	0.115	0.150		.131	.132	.131	.129		
AI	0.454	0.474		.460	.457	.460	.460		
AJ	2.779	2.789		2.784	2.784	2.784	2.784		
AK	0.240	0.260		.250	.250	.250	.250		
AL	1.002	1.042		1.042	1.041	1.036	1.042		
AM	0.053	0.073		.063	.063	.063	.063		
AN	0.257	0.262	DT8683	.259	.259	.259	.259		
AO	1.663	1.683		1.674	1.674	1.674	1.674		
AP	0.053	0.073		.063	.063	.063	.063		
AQ	0.022	0.042		.032	.032	.032	.032		
AR									
AS									
Accept/Reject									

Measured by: S.S.	Audited by: ML
Date: 07/06/07	Date: 07/07/04

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	

DART AEROSPACE LTD	Work Order:	32373
Description: Ø2.250 Support	Part Number:	D2891-1
Inspection Dwg: D2891 Rev. A1		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	13	14	15	16	By	Date
Lathe Section									
A	2.274	2.279		2.277	2.277	2.277	2.277		
B	3.702	3.722		3.706	3.710	3.710	3.710		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.730	.730	.730	.730		
E	0.090	0.110		.101	.101	.101	.101		
F	2.464	2.484		2.474	2.474	2.474	2.474		
G	2.029	2.049		2.040	2.040	2.040	2.040		
H	2.964	2.984		2.974	2.974	2.974	2.974		
I	0.913	0.933		.925	.929	.890	.910		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.101	.099	.084	.082		
L									
HAAS Section									
AA	0.188	0.193	DT8706	.189	.189	.189	.189		
AB	0.240	0.260		.248	.251	.248	.252		
AC	0.115	0.150		.124	.125	.125	.125		
AD	0.040	0.060		.060	.060	.055	.052		
AE	0.010	0.020		.015	.015	.015	.015		
AF	0.240	0.260		.250	.250	.250	.250		
AG	0.290	0.310		.305	.300	.300	.300		
AH	0.115	0.150		.130	.131	.131	.131		
AI	0.454	0.474		.454	.454	.464	.464		
AJ	2.779	2.789		2.784	2.784	2.784	2.784		
AK	0.240	0.260		.250	.250	.250	.250		
AL	1.002	1.042		1.042	1.039	1.041	1.042		
AM	0.053	0.073		.063	.063	.063	.063		
AN	0.257	0.262	DT8683	.259	.259	.259	.259		
AO	1.663	1.683		1.670	1.672	1.671	1.671		
AP	0.053	0.073		.063	.063	.063	.063		
AQ	0.022	0.042		.032	.032	.032	.032		
AR									
AS									
Accept/Reject									

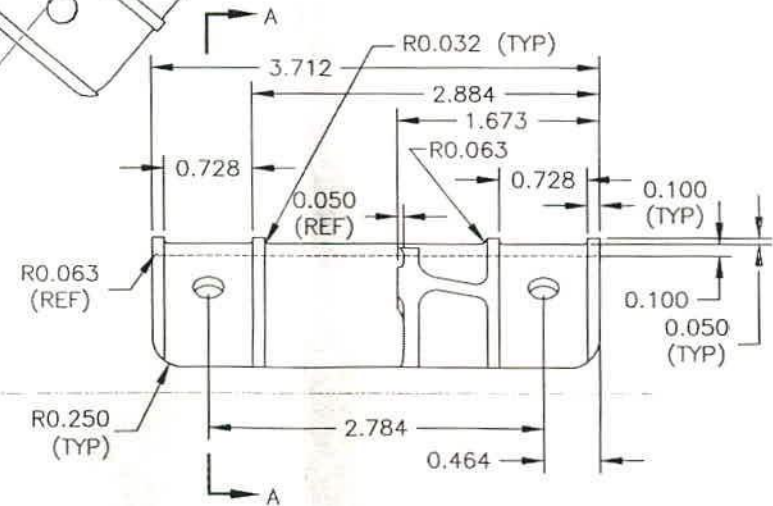
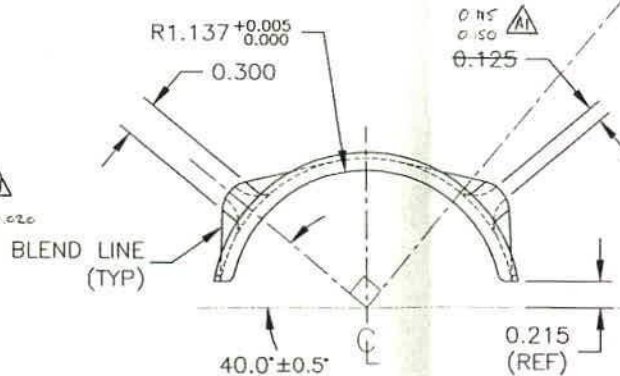
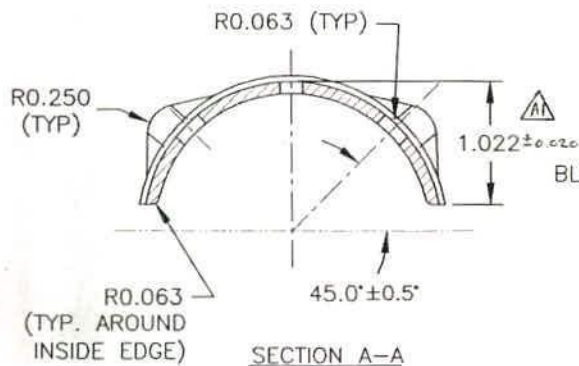
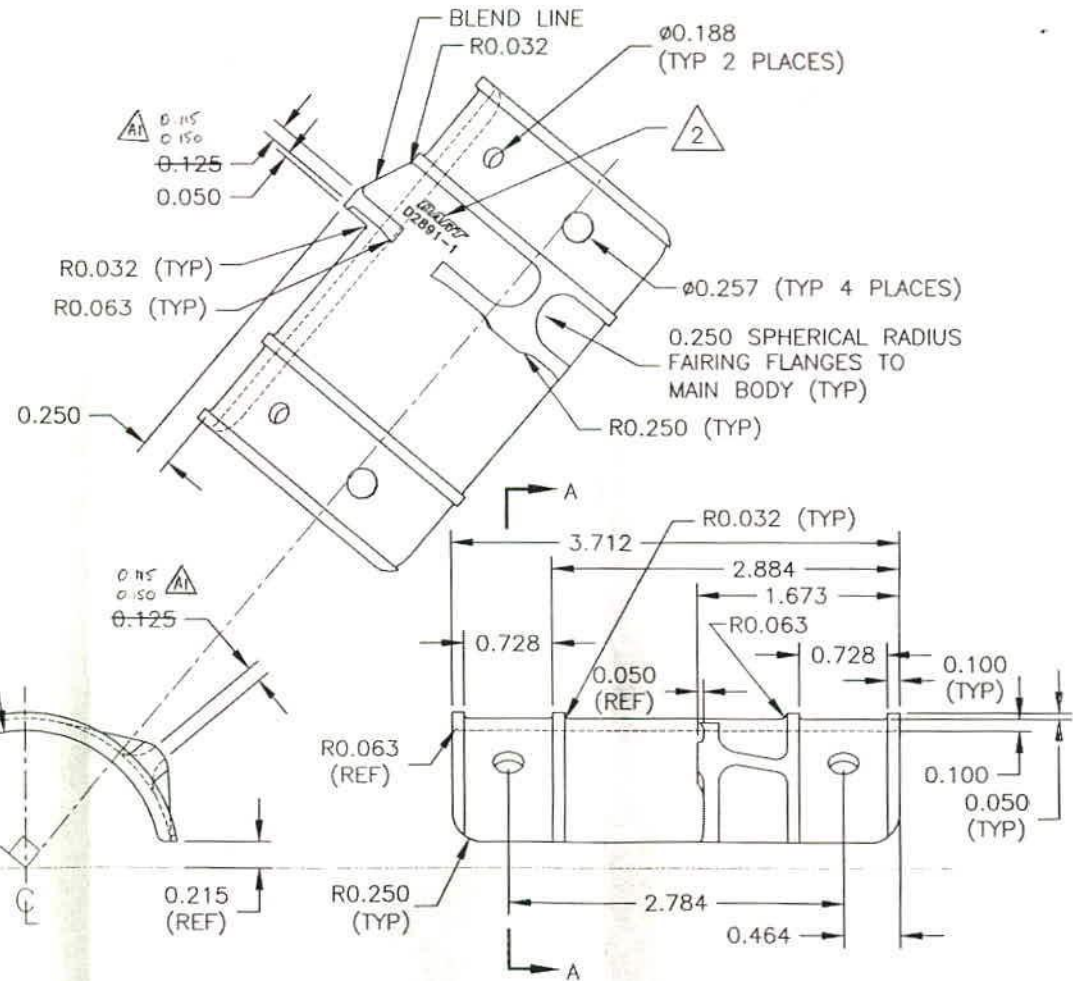
Measured by:	<i>J.S.</i>
Date:	<i>07/06/07 / 07/07/04</i>

Audited by:	<i>Jml</i>
Date:	<i>07/07/04</i>

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF <i>JF</i>	<i>J</i>

D2891-1

- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP.
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 (REF. X.XXX = ± 0.010) UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3



SHOP COPY
 RETURN TO
 ENGINEERING
 UNCONTROLLED COPY
 SUBJECT TO AMENDMENT
 WITHOUT NOTICE
 WORK ORDER
 NO. 32373

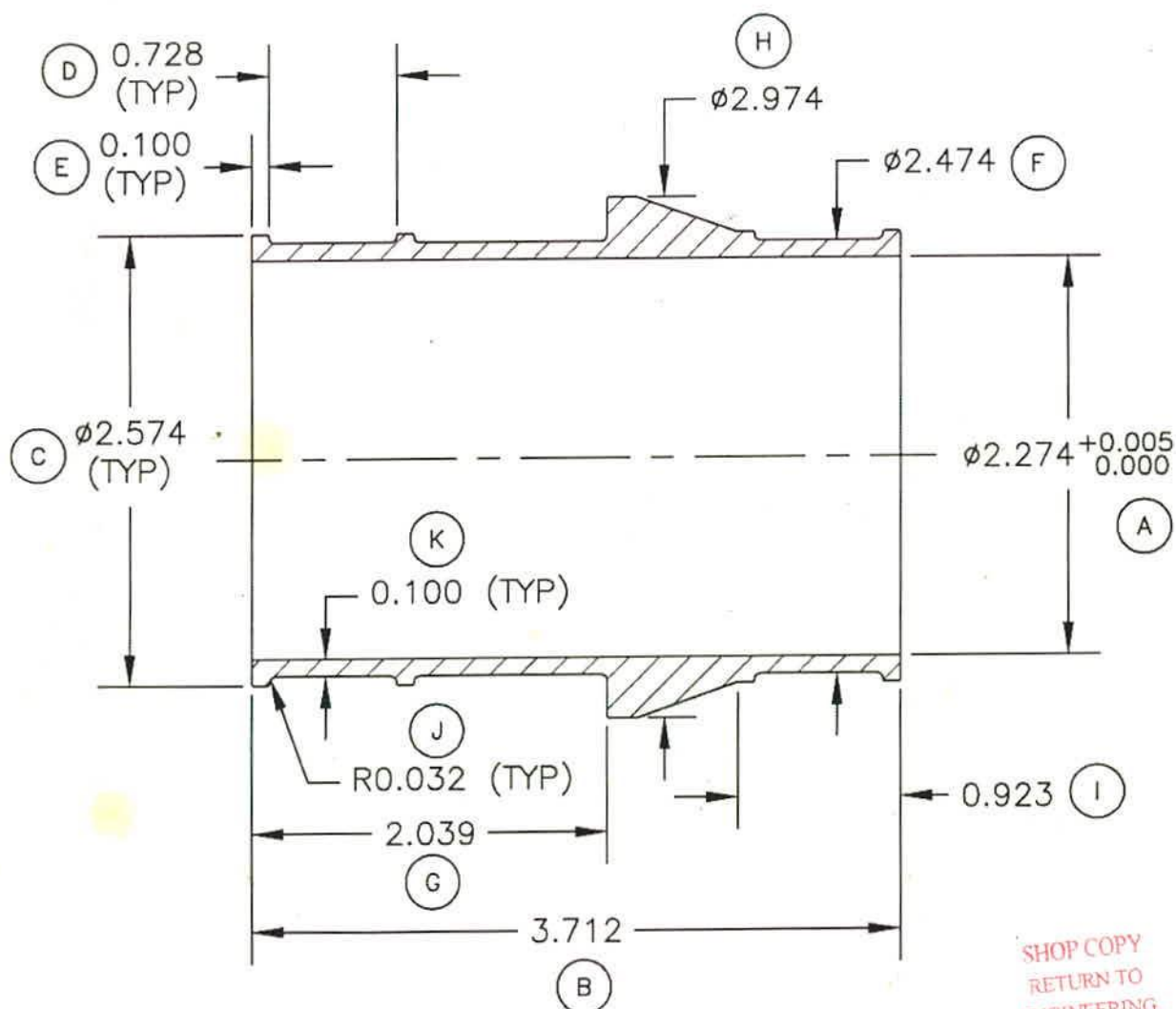
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AI	02.01.23	UPDATE DMS AS MANUFACTURED
A	00.11.17	NEW ISSUE
DESIGN	CP	DART DART AEROSPACE LTD. MARKHAM, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D2891
DATE	00.11.17	TITLE Ø2.250 SUPPORT
		REV. A SHEET 1 OF 1 SCALE 1:1



RELEASED
03.07.01



D2891-1 TURNING DETAIL

SHOP COPY
RETURN TO
ENGINEERING
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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 32313

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A.M. CASTLE & Co. (Canada) Inc.		EXPÉDIE 21 MAR 2007	
REQUISITION CLIENT-CUSTOMER REQUISITION NO.	NO. COM. CLIENT-CUST. ORD. NO.	COMPTES-ACCT. VEND. SLS TERR. EXPÉDIE PAR-SHIP VIA	
	3795	91037 200 40 CABANO (PPD)	
ACHETEUR-PURCHASING AGENT	TELEPHONE	H/C TAXE NO. COM ORD	REGION LIVRAISON-DEL ZONE F.A.B.-F.O.B.
NDA LACELLE	613 632-3336	9 0 1	C/C
A-SHIP TO:	VENDEUR A-SOLD TO:		PREPAID
	DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY ON K6A 1K7		BILL NO. FEVILL/EMBALLAGE-B/L NUMBER
		A105021	

INSTRUCTIONS/LIVRAISON-DELIVERY	INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)	INFORMATION CREDIT-CREDIT INFORMATION	ROUTE
IQ-E55353		Opéré par / Operated by: TRANSPORT TFI 5 SEC • NIR : R564638-6	01*NL-05/28 31-NL-05/28
		19048584-1	

OPTION - ITEM 1	2500 RD 17CR-4NI RT SOL. TREATED COND A 3.80" GOLD	QTE/UNITE COM.-ORDERED	POIDS COM.-WT. ORDERED
		32 PCS	286
CERTIFICAT DE CONFORMITE	INSTRUCTIONS	BALLOTS-BUNDLES	POIDS EXP.-WT. SHIPPED
See Packing Slip for English Certificate of Conformance	TOL + 1/8" - 0	1	286
I. Castle & Co. (Canada) Inc. certifie que la material fourni prés ce document rencontrera et est conforme aux spécifications du produit(s) décrit(s) ci-contre.	PRIOR DIST/ORD: 01 931733	FORME-SHAPE	I.A.C.
A.M. Castle & Co. (Canada) Inc.		28.210FT	42470
DS POUR EXPEDITION SEULEMENT. VOIR FRACTURE JR LE POID EXACT FRACTURE. SVP SIGNER ET ETER LA COPIE DU CHAUFFEUR POUR RECEPTION DU MATERIAL ET, SI VERIFIE, CERTIFICAT D'ANALYSE.			ENT-WHS
			4

OPTION - ITEM 2	INSTRUCTIONS	COULÉE INFO-HEAT INFO QTE-QTY	QTE/UNITE COM.-ORDERED	POIDS COM.-WT. ORDERED
TERMES ET CONDITIONS		INSTRUCTIONS (CONT'D.)	BALLOTS-BUNDLES	POIDS EXP.-WT. SHIPPED
PREPAID	1 Box			
RESTRICTION DE RESPONSABILITE			FORME-SHAPE	I.A.C.
AU VERSO				ENT-WHS

OPTION - ITEM 3	INSTRUCTIONS	COULÉE INFO-HEAT INFO QTE-QTY	QTE/UNITE COM.-ORDERED	POIDS COM.-WT. ORDERED
S / Métaux Castle			BALLOTS-BUNDLES	POIDS EXP.-WT. SHIPPED
835 Selkirk	1 Box			
Pointe Claire, Que. H9R 3S2			FORME-SHAPE	I.A.C.
306644 2				ENT-WHS

LETRE MOULEE-NAME (PRINT ONLY)	DATE RECU-DATE RECEIVED
PAR-RECEIVED BY	

SP 425, 50-A



P.O. BOX 977
SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

S O L D T O	A H CASTLE, INC	S H I P T O	A H CASTLE, INC	CUR ORDER NO.
	3400 N WOLF RD FRANKLIN PARK, IL 60131		3400 N WOLF RD FRANKLIN PARK, IL 60131	PS-17025-6-1 DATE 11 02 2007

CUSTOMER ORDER # & DATE 01-23367	CUSTOMER REQ. #	DISTRICT R PARSONS	SHIPPED FROM SYRACUSE
-------------------------------------	-----------------	-----------------------	--------------------------

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470
 ANS 3174-10 REV 7 ASME-SAS64-04ED 1630 ASTM-A564-04 1630
 AMS-5643R (EX SURFACE) AISI 630 UNS-S17400

SIZE

3.250 RD

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CO	1
A18564	.034	.60	.030	.018	.45	4.04	15.20	.11	3.13	.26	.10

CASTLE METALS FP
 DATE REC'D 3/9/07 IAC 42470
 APPROVED BY: SLW

MECHANICAL PROPERTIES

QUANTITY	HEAT NO.	TENSILE PSI	YLD. 0.2% PSI	ELONG 4D	RED. AREA %	HARDNESS BHN 350
1187 #	A18564	205,660	160,640	12.3	53.3	BHN 413

MACRO TEST OK
 FERRITE 3 %
 MAGNAFLUX F/B = 0/0

REDUCTION RATIO: 27.511

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
 AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18510.
 MATERIAL INGOT CAST.
 NAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
 NO WELD REPAIR PERFORMED
 MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT
 MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORD
 WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH T
 SPECIFICATION REQUIREMENTS.
 CRUCIBLE MATERIALS CORPORATION
 ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF _____, 20

CERTIFIED BY: SLW

QUALITY ASSURANCE REPRESENTATIVE



CERTIFICATE OF TEST

S O L D T O	A M CASTLE, INC	S H I P T O	A M CASTLE, INC	OLR ORDER NO.
	3400 N WOLF RD FRANKLIN PARK, IL 60131		3400 N WOLF RD FRANKLIN PARK, IL 60131	P5-17223-6-F DATE 03/14/07

CUSTOMER ORDER # & DATE	CUSTOMER REQ. #	DISTRICT	SHIPPED FROM
01-23367		B PARSONS	SYRACUSE

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470

SIZE

3.250 RD

AMC-3174-10 REV 7 ASME-SA564-04ED T630 ASTM-A564-04 T630
AMS-5643Q (EX SURFACE) AISI 630 UNS# 817400

HEAT NO.

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
A18289	.046	.50	.027	.021	.61	4.17	15.11	.14	3.38	.27	.007

CASTLE METALS CORP.

DATE RCVD

IAC 42470

APPROVED BY

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

678 # A18289

TENSILE PSI

YLD.2%PSI

%ELONG2IN

RED/AREA HARDNESS

BHN 363

CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:

204,770

179,850

13.8

52.6

BHN 415

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.
MATERIAL INGOT CAST.

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.

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SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF , 20

NOTARY PUBLIC

CERTIFIED BY:

QUALITY ASSURANCE REPRESENTATIVE

JACQUE L. WHITE - SPECIFICATION EXAMINER

CERTIFICATE OF TESTS
CERT SERIAL# 000479979
 **TALLEY METALS**
A Carpenter Company

Talley Metals Technology, Inc.
P.O. Box 2498

Harrisville, SC 29551 Tel: 843.335.7540 Fax: 843.335.6465

ABNAHMEPRUEFZEUGNIS**CERTIFICAT DE CONTROLE**

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12/10/04

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR PAGE 1 OF 2

A.M. CASTLE & CO
3400 N WOLF RD
FRANKLIN PARK, IL 60131

HVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/POIDS
01-28383-01	W67226	12/10/04	9153

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE: G9723

PRODUCT DESCRIPTION: TYPE 17-4 SOLUTION ANNEALED ROUGH TURNED
PART NUMBER: IAC 42470

SPECIFICATION: CASTLE 3174-10 CAP OF COND. H900 REV. 5 (02/18/04)
AMS 5643 REV Q (01/ /03) (UNS S17400) (AISI 630)
ASTM-A564-04
ASME-SA564 2001 EDITION

SIZE 3.250000 IN. (82.55 MM) RD BAR

PRIMARY HEAT CHEMISTRY (WT%):

C	MN	SI	P	S	CI
0.03	0.84	0.48	0.019	0.026	15.32
NI	MO	CU	N	CB	PT
4.42	0.29	3.61	0.032	0.25	0.01
CB+TA					
0.26					

THIS HEAT MELTED BY THE ARC/AOD PROCESSES
NO WELD REPAIR.

MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM AND ALPHA SOURCE
CONTAMINATION.

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HB - 321 (MIDRADIUS)

MAGNETIC PARTICLE? FREQUENCY = 0 / SEVERITY = 0

MICROSTRUCTURE - FERRITE 1.60%

CASTLE METALS ET

SOLUTION ANNEALED 1900 F - 1 HOUR - RAPID COOL

HOT REDUCTION RATIO: 8:1

MATERIAL WAS MELTED AND MANUFACTURED IN THE USA.

DATE REC'D 12.15.04 IAC 42470

APPROVED BY 

CONTINUED ON NEXT PAGE

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CERTIFICATE OF TESTS

ABNAHMEPRUEFZEUGNIS

CERTIFICAT DE CONTROLE

CERT SERIAL# 000479979


TALLEY METALS
 A Carpenter Company

 Talley Metals Technology, Inc.
 P.O. Box 2498

Hartsville, SC 29551 Tel: 843.335.7540 Fax: 843.335.6465

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12/10/04

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR PAGE 2 OF 2

 A.M. CASTLE & CO
 3400 N WOLF RD
 FRANKLIN PARK, IL 60131

HVL

CUSTOMER ORDER NO. / BESTELL-NR. / N° DE COMMANDE	CARPENTER NO. / WERKS-NR. / N° DE RÉFÉRENCE INTERNE	DATE / DATUM / DATE	WEIGHT / GEWICHT / POIDS
01-28383-01	W67226	12/10/04	915S

 HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE:
 CAPABILITY

G9723

900 F(482 C), 01 HR

AIR COOL

YIELD STRENGTH, (0.20 %) KSI(MPA)	192.0(1324)
TENSILE STRENGTH, KSI(MPA)	202.0(1393)
ELONGATION IN 2.00", %	13.0
REDUCTION OF AREA, %	46.0
HARDNESS, HB	401.0

(CONVERTED FROM TENSILE STRENGTH)

 WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE
 PURCHASE ORDER AND SPECIFICATION REQUIREMENTS.

 TIMOTHY DUVAL
 QUALITY ASSURANCE REP.
 CARPENTER TECHNOLOGY CORPORATION

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Chris Provencal

From: David Shepherd [dshepherd@dartaero.com]
Sent: June 26, 2007 6:49 PM
To: 'Chris Provencal'
Cc: 'Murdoch, Jason'; 'Marc Bellavance'
Subject: RE: NCR D2891-1

Chris,

I agree with your assessment of the situation.
Parts are acceptable and the grooves should be buffed out by hand.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Monday, June 25, 2007 11:24 AM
To: '*David Shepherd (*David Shepherd)'
Cc: 'Murdoch, Jason'; 'Marc Bellavance'
Subject: NCR D2891-1

David,

Qty(4) D2891-1 Supports,

The width of one of the ridges is 0.085" instead of 0.100" (ref attached dwg). The overall length is 3.679" on one of them as well (instead of 3.712"). I don't see a problem with this myself.

On one, there are also two concentric grooves, 0.010" deep x 0.150" wide. I figure they can blend using a hand tool, and again I don't see a problem with this.

-Chris

No virus found in this incoming message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.9.7/868 - Release Date: 6/25/2007 12:20 PM

No virus found in this outgoing message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.9.7/868 - Release Date: 6/25/2007 12:20 PM